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Progress on integrating climate change adaptation and disaster risk reduction for sustainable development pathways in South Asia: Evidence from six research projects

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ABSTRACT

Due to natural vulnerabilities and human factors, losses and damages from natural disasters continue to rise in South Asia. There is also growing evidence for links between climate change and disaster risks. In response, there have been calls for bringing together climate change adaptation (CCA) and disaster risk reduction (DRR) policy development, in order to address the risks efficiently and to promote sustainable development pathways. However, progress toward such convergence in the policy arena has been uneven. We report on a group of six research projects awarded in three countries of South Asia to examine progress, research needs and potential mechanisms for improving implementation of CCA and DRR. Some significant localized improvements in CCA-DRR were generated, primarily through facilitating communication across administrative scales and with local communities. We observed a common tendency toward weak institutional coordination between agencies charged with disaster response and those charged with climate change planning (as well as development planning more broadly). The idea that sustainable development requires addressing combined natural and anthropogenic hazards does not yet appear to have penetrated to the institutional levels where disaster response planning commonly takes place. We close by identifying further knowledge needs and proposing recommendations for steps toward convergence of disaster risk reduction and climate change adaptation.

1. Introduction

By virtually any measure—whether in terms of number of events, lives lost, people affected or financial impacts—the global incidence and severity of natural disasters has been rising over the last decade or more [9,20]. The incidence rate of major natural hazards is distributed unevenly across the globe, depending upon geography, geology, history and other independent variables. Countries in Asia and the Pacific are four times more likely than those in Africa, and 25 times more likely than those in Europe or North America, to experience disasters [53]. Due partly to its strong seasonal monsoon pattern, the South Asian subcontinent is particularly prone to weather-related disasters including floods, cyclones, landslides, droughts and heat waves. The frequency and severity of such events are expected to increase significantly with climate change. Impacts will be felt both directly and through interactions with other drivers and stressors in coupled human-natural systems, including unplanned urbanization, high rates of population growth, persistent poverty, loss of critical environmental services, and land degradation. In addition to rapid-onset disasters, slow-onset crises—many linked to shifts in drought frequency and rainfall characteristics, interacting with widespread degradation of the natural resource base—further compound vulnerability to disasters. In 2012,

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UNISDR estimated that between 1971 and 2009, disasters affected over 2 billion people and caused over 800,000 deaths across the region, at a cost of $80 billion (UNISDR, 2012). Over the decade 2005–2015, a total of 481 disaster events were reported in South Asia, claiming 135,000 lives and heavy economic losses [5].

1.1. Convergence

Growing evidence for tight linkages between climate changes and increasing disaster risks presents fundamental challenges to sustainable development and poverty reduction in South Asia. A coalition of international development organizations pointed to the unavoidably cross-scalar and cross-sectoral nature of disaster reduction planning when they declared that "Development is never disaster neutral; it creates, exacerbates or reduces risk … Disaster risk reduction is a development issue. Making risk reduction a central component of the future development agenda is the only way to ensure that disasters do not derail development itself" [23]. This broad intersection of development with disaster risks is why effective planning absolutely must involve a wide range of government departments and agencies. Indeed, there have been numerous calls for CCA-DRR 'convergence' (e.g. [15,24,25,32,35,46]).

As yet, however, there have been few reports of successful integration of climate concepts into development planning or disaster risk policies, and on the ground, CCA and DRR frameworks have continued to evolve in isolation [11,17,34,38]. A 2012 special report by the IPCC emphasized the inherent interdependencies of CCA and DRR [20], and the most recent IPCC [21] describes DRR and CCA approaches as 'overlapping' and offering 'co-benefits' (pp. 26–27). However, the 2013 UNISDR report on national-level progress in implementing the Hyogo Framework's recommended DRR strategies warned that "nearly all countries reported having difficulty inserting climate change adaptation measures into national [DRR] policies" ([47] p. 8). The new Sendai Framework of 2016 is largely silent on convergence, though it recommends "Addressing climate change as one of the drivers of disaster risk" ([50] p. 11). A separate UNISDR declaration, however, calls more explicitly for 'coherence and mutual reinforcement' between the Sendai DRR strategies and national climate-adaptive initiatives [49]. The challenge inherent in implementing these calls is the theme of this paper.

1.2. Definitions

There has been some controversy about what exactly is meant by convergence, and whether disaster reduction, or climate adaptation—or neither—should take precedence in the process of converging [7,10,29]. How convergence relates to allied concepts such as *linkage* (UNISDR 2008 [3,38]), *integration* [3,6,17], *nexus* [17], *interface* [22] or *mainstreaming* [19,26,39] are other areas in which authors have taken contrasting positions [8,18,31]. There is no clearly defined or differentiated taxonomy here—nor, perhaps, does there need to be, since in every case on the ground, the particular pathway to successful implementation depends heavily on context.

Here, we treat 'convergence' as the process of bringing the imperatives, knowledge and practices of CCA together with those of DRR *in the policy arena*, so that the goals and targets of each endeavor are informed by those of the other. In essence, convergence demands that we *do no planning* for disaster management *without* taking into account the most up-to-date knowledge available on likely future impacts of climate change within the relevant political-administrative unit or landscape. Conversely, any policy designed to promote climate-adaptive activities should be coordinated with disaster reduction and management policies in order to minimize potential conflicts. We favor the term 'convergence' for its appropriately dynamic connotation: convergence is the result of bringing two or more ongoing streams or processes together, so that they merge or continue in parallel. The respective administrative apparatuses and policy streams of DRR and CCA conventionally proceed separately. This paper provides evidence for the need to guide the two onto converging trajectories.

1.3. Implementation

If the concept of CCA and DRR convergence is to become more than a normative statement of intent, an evidence-base in specific contexts needs to be rapidly built up. Convergence will often require significant changes in administrative frameworks: meaningful community participation in planning needs to be facilitated; technological and participatory approaches for capacity building need to be integrated; and coordination of governance at multiple levels need to be strengthened so that existing convergence-friendly policy directives are implemented on the ground. In order to better understand these issues, the Climate and Development Knowledge Network (CDKN) and START awarded six interdisciplinary research projects to pursue the challenge of integrating CCA and DRR into resilient development in India, Nepal, and Pakistan. These six projects were implemented between 2012 and 2014, and culminated in a general meeting in Delhi. The illustrative examples in this paper derive from this body of research.

This paper is structured along the following lines: First, we briefly introduce the research sites and socio-economic contexts (Section 2). We then examine lessons learned about CCA-DRR convergence using examples and conclusions from the six projects (factors *facilitating* convergence in Section 3; common *constraints* to convergence in Section 4). We conclude with a final section on research needs and future directions for policy makers, civil society and the research community to support further steps toward CCA-DRR convergence in South Asia.

2. Research sites

The six research projects were located in a wide variety of biophysical and administrative environments in South Asia (see Table 1). These included coastal sites (eastern Odisha state), riverine floodplains (Gorakhpur), hot and cold deserts (Barmer and Leh), monsoon-affected montane regions (Darjeeling/Sikkim), semi-arid coastal plains (Sindh, Pakistan) and a major Himalayan watershed (Koshi River, Nepal). Focal administrative units ranged in extent from single villages (Sobara village in Odisha) to districts (Darjeeling, North Sikkim and Gorakhpur) to ecoregions (coastal Odisha and Koshi watershed) and entire provinces (Sindh, Pakistan).

Activities and engagements were similarly diverse, both in kind and in scale. Table 2 summarizes each project's problem analyses (diagnoses), research methods and approaches employed, specific implementation challenges faced, and results and outcomes communicated. Problem diagnoses, methods and approaches were developed and the work was performed independently by the respective research groups; challenges faced, results and outcomes were communicated by them and were subjected to questioning, analysis and refinement in the *post hoc* group meeting.

In the sections that follow, we discuss these experiences in detail, contextualizing them with reference to the wider literature.

3. Institutional and community linkages for convergence

The most obvious obstacles to CCA-DRR convergence are organizational and administrative. Disaster management and climate analysis have historically been the purview of quite separate branches of government, and government agencies have often overlooked the input of local communities at the forefront of disaster response and adaptation. Achieving convergence between CCA and DRR is thus likely to demand substantial institutional changes. The research projects investigated and facilitated linkages among local and regional administrative units. They identified three basic categories of needs for convergence: 1) in coordinated planning and communication across scales (i.e., information-